Problem of a higher hydrogen ...

condensate is due to the decomposition of the H_2O_4 compound, which takes place by different mechanisms in the solid and in the liquid state. Mention is made of Ye. N. Yeremin, who took part in the work of Ref. 7 together with L. I. Nekrasov and N. I. Kobozev. There are 3 figures, 1 table, and 17 references: 7 Soviet-bloc and 10 non-Soviet-bloc. The three most recent references to English language publications read as follows: M. A. P. Hogg, J. E. Spice, J. Chem. Soc., Sept., 3971, 1957; J. A. Cormley, J. Amer. Chem. Soc., 79, 1862, 1957; R. L. Livingston, J. A. Cormley, H. Zeldes, J. Chem. Phys., 24, 483, 1956.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 28, 1959

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22006

S/076/61/035/004/014/018
B106/B201

24.3560 1035, 1160, 1158

AUTHORS: Krylova, I. V., and Kobozev, N. I.

TITLE: Magnetochemistry of active centers.
VI. Magnetic properties of crystal phosphor catalysts

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 911 - 916

TEXT: In continuation of an earlier paper (Ref. 3: I. V. Krylova, M. M. Danchevskaya, N. I. Kobozev, Zh. fiz. khimii, 29, 1684, 1955) on the catalytic and luminescence properties of two catalyst systems (crystal phosphors from zinc oxide, applied to silica gel (ZnO/SiO_2), and copper-activated zinc sulfide ($ZnS \cdot Cu$)), the authors of the present paper studied the magnetic properties of these two catalytic systems. The catalysts of the type ZnO/SiO_2 which were examined here contained very different amounts of zinc oxide (the covering density α varied between 0.0002 and 0.1 of the monomolecular layer), and the activated zinc sulfide catalysts contained from 10^{-6} to 10^{-2} g Cu per g of ZnS. The ZnO/SiO_2 cata-

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S/076/61/035/004/014/018
B106/B201

Magnetochemistry of active ...

lysts were prepared by stirring fine silica gel powder into the solution of a given amount of zinc nitrate; after a 24-hour standing time the solution was vaporized together with the silica gel, the catalyst was dried, and heated up to 400°C for three hours, to allow the remaining zinc nitrate to decompose completely. The ZnS·Cu catalysts were prepared by impregnating zinc sulfide with a copper nitrate solution and subsequent heating up to 800°C (without melting). The authors applied Faraday's method to examine by a scale of I. N. Ozeretskovskiy's system the dependence of the magnetic susceptibilities χ of the two catalyst systems on the covering density α of silica gel with zinc oxide, or on the content of the Cu activator in the ZnS luminophore. The investigation yielded the following results: (1) In case of a strong dilution of the luminophore layer (ZnO) on the carrier (SiO_2) and a low content of the activator (Cu) in the luminophore (ZnS), the magnetic susceptibility of the specimen goes through a very high maximum, i.e., a paramagnetization of the diluted layers takes place in the same way as in metals. The height of the maximum is even indicative of a hyperparamagnetism of diluted layers. The

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Magnetochemistry of active ...

susceptibility referred to 1 g of the luminophore applied, or to 1 g of the activator contained attains at high degrees of dilution values of 10^4 (at $\alpha_{ZnO})SiO_2 = 5 \cdot 10^{-4}$), or of 10^6 (at Cu:ZnS=$1.5 \cdot 10^{-6}$:1) units $\chi \cdot 10^{-6}$. To make this very strong paramagnetism fit the possible number of Bohr magnetons per particle, one must assume that each ZnO or Cu^+ particle causes the paramagnetization of a large zone of the carrier lattice, this zone being considerably larger in the lattice of the ZnS semiconductor than in the lattice of the SiO_2 dielectric. (2) A close relationship exists between the magnetic and the luminescence properties of luminophores. The magnetic susceptibility and the duration of after-glow of ZnS·Cu-type luminophores depend in perfectly the same manner on the content of the Cu activator. This marked similarity is indicative of the fact that the hyperparamagnetism is possibly related to the circum-stance that many trapping levels of sufficient depth and heavily occupied by electrons are formed in the lattice of the carrier under the effect of the adsorbed or the dissolved activator. Mention is made of a paper by

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22006

S/076/61/035/004/014/018
B106/B201

Magnetochemistry of active ...

N. I. Kobozev, V. B. Yevdokimov, I. A. Zubovich, and A. N. Mal'tsev (Ref. 1: Zh. fiz. khimii, 26, 1349, 1952), where the magnetic properties of applied metallic catalysts have been studied. There are 3 figures, 2 tables, and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows: K. Oshima, H. Nagano, J. Chem. Phys., 23, 1473, 1955; S. Zarach, J. Turkevich, J. Phys. Chem., 60, 1598, 1956).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: July 28, 1959

Card 4/4

KOBOZEV, N.I.

Particular features of the kinetics of conversion of complex structures. Zhur. fiz. khim. 35 no.5:984-991 My '61. (MIRA 16:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet, kafedra fizicheskoy khimii.
(Chemical reaction, Rate of) (Molecules)

24020
S/076/61/035/005/003/008
B101/B216

11.1320
11.1230

AUTHORS: Skorokhodov, I. I., Nekrasov, I. I., Korozev, N. I., and Filonova, A. D. (Moscow)

TITLE: Study of the formation of hydrazine during dissociation of ammonia in an electric glow discharge

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 5, 1961, 1026-1030

TEXT: The industrial synthesis of hydrazine according to Raschig is too expensive because the dilute solutions obtained must be concentrated. Therefore, the production of hydrazine by electric discharge was studied. The authors present a survey of results obtained by western scientists and the reaction equations proposed by them, and report on their own experiments intended to clarify the mechanism of hydrazine formation. For this purpose, they used the apparatus described in Ref. 12 (Zh. fiz. khimii, 31, 1811, 1957), which was used by the authors of that paper to study the water vapor dissociation by electric discharge. NH_3 entered a U-shaped discharge tube and was collected in a vessel cooled by liquid nitrogen. The

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24020

S/076/61/035/005/003/008
B101/B216

Study of the formation of hydrazine during...

electrodes were made of stainless steel. The pressure of NH_3, which varied between 5-10 mm Hg, was measured by a diaphragm gauge. The flow of NH_3 varied between 0.2 and 3.2 l/hr (pressure 1 atm). The discharge current was 0.05-0.25 a, which corresponds to a power of [illegible] va. The hydrazine formed was determined photoelectrocolorimetrically by means of p-dimethyl aminobenzaldehyde. The fraction of NH_3 which did not react was collected in H_2SO_4 and determined by titration of the excess acid. The authors found that the yield of N_2H_4 attains a maximum at 1.1 mm Hg, regardless of the discharge intensity. In order to establish a law on the basis of the experimental data, the authors took up/v as a parameter (u is proportional to the discharge, v and v denote the rate of flow of the gas, l/hr; p is the gas pressure at the input of the discharge tube, mm Hg). Fig. 1 shows the degree of dissociation of NH_3 as a function of up/v; Fig. 2 shows the relative yield of N_2H_4 (expressed in % of dissociated NH_3) as a function of up/v. The maximum yield was 4 % referred to dissociated NH_3, and 0.5 %

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referred to the total amount of NH_3 passed through the apparatus. Experiments at -80 and -196°C showed that the yield of N_2H_4 does not depend on temperature. It is concluded that the formation of hydrazine proceeds according to the equation $NH_2 + NH_2 + M \longrightarrow N_2H_4 + M$ (5), where M is a particle causing recombination. Dissociation of N_2H_4 proceeds according to the equations $N_2H_4 \longrightarrow N_2H_4^* \longrightarrow 2NH_2$ (6) and $N_2H_4 + H \longrightarrow NH_2 + NH_3$ (7). Thus, the yield of N_2H_4 depends on several factors which act together: 1) on the concentration of NH_2 radicals, which is inversely proportional to the dissociation of NH_3; 2) on the concentration of atomic hydrogen, which is directly proportional to the dissociation of NH_3; 3) on the time for which the gas remains in the discharge tube. The shorter this period, the less is the dissociation of N_2H_4. A maximum degree of NH_3 dissociation corresponds to a minimum concentration of NH_2 radicals and to a maximum concentration of atomic hydrogen. Thus, the yield of hydrazine reaches a

POSPELOVA, T.A.; KOBOZEV, N.I.

Catalytic synthesis of hydrogen peroxide from the elements on palladium. Part 3: Active centers of the catalytic decomposition of hydrogen peroxide on palladium. Zhur.fiz.khim. 35 no.6:1192-1197 Je '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Hydrogen peroxide) (Palladium)

11.1510
11.1310

27683
S/076/61/035/009/006/015
B106/B110

AUTHORS: Skorokhodov, I. I., Nekrasov, L. I., and Kobozev, N. I.

TITLE: The problem of a higher hydrogen peroxide and frozen radicals. V. Thermographic method for studying the decomposition process of peroxide radical condensates

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 2025 - 2030

TEXT: The decomposition of condensates containing peroxide radicals was studied thermographically. The systems investigated were obtained from water vapors dissociated in an electric discharge, and from the reaction of atomic hydrogen with liquid 100 % ozone at liquid nitrogen temperature. The system obtained from water vapor contained approximately 15 % (by weight) H_2O_4 and considerable amounts of H_2O_2; that from hydrogen and ozone contained up to 60 % H_2O_4 with no H_2O_2. The method of preparation was described previously (Ref. 2: N. I. Kobozev, I. I. Skorokhodov, L. I. Nekrasov, Ye. I. Makarova, Zh. fiz. khimii, 31, 1843, 1957; Ref. 5: L. A. Reznitskiy, K. G. Khomyakov, L. I. Nekrasov, I. I. Skorokhodov, Zh. fiz.

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3

The problem of a higher hydrogen ...

khimii, 32, 87, 1957). The thermographic investigation method was similar, in many respects, to the method of differential-thermal rapid analysis elaborated by G. V. Ravich, G. G. Tsurinov, and V. A. Vol'nova (Ref. 3: Zavodsk. laboratoriya, 19, 802, 1953). Fig. 1 shows the block diagram of the apparatus used. A photorecording Kurnakov pyrometer of the ФПК-55 (FPK-55) type was used for recording the heating curves. Heating was carried out at a constant rate of 15°/min. Automatic recording was switched on at -160 to -150°C, and was continued for about 10 min. The investigations produced the following results: Independent of the preparation method, the peroxide radical condensates contain the same compounds which decompose during temperature increase. The evaluation of thermochemical data (heat effects of 34 - 36 Kcal/mole O_2 at decomposition temperatures $>-55°C$) showed that the decomposing compound is the higher hydrogen peroxide H_2O_4, which agrees with the data in Ref. 8 (I. I. Skorokhodov, L. I. Nekrasov, L. A. Reznitskiy, K. G. Khomyakov, N. I. Kobozev, Zh. fiz. khimii, 33, 2090, 1959). The differences in the thermograms of the two systems investigated are based on the following fact: The condensate produced from dissociated water vapor is of disordered structure, and crystallizes at -110 to -70°C. The hydrogen peroxide in

The problem of a higher hydrogen ...

the condensate is responsible for crystallization. During heating in the temperature range of from -110 to -75°C, the heat of crystallization of the amorphous part of the condensate appears, therefore, besides the chemically conditioned thermal effects. On the other hand, the condensate from the reaction of atomic hydrogen with liquid ozone before decomposition contains no hydrogen peroxide, and is of crystalline structure. In this case, no heat of crystallization, only chemically conditioned thermal effects appear. The good agreement of values for ΔH calculated from thermograms with data obtained calorimetrically shows that the thermographic method may be successfully applied to the investigation of frozen systems containing radical and metastable compounds. The authors thank Ye. I. Makarova for conducting the chemical analyses. L. G. Berg and V. Ya. Anosov (Ref. 7: Zh. obshch. khimii, 12, 32, 1942) are mentioned. There are 4 figures, 1 table, and 10 references: 8 Soviet and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: R. A. Jones, C. A. Winkler, Canad. J. Chem., 29, 1010, 1951.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

27684
S/076/61/035/009/007/015
B106/B110

11.1120

AUTHORS: Filippov, Yu. V., and Kobozev, N. I.

TITLE: Electrosynthesis of ozone. III. Effect of temperature of ozonizer electrodes on ozone synthesis

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 2078 - 2082

TEXT: The cooling of electrodes during electrosynthesis of ozone is very important since in high-frequency discharges in ozonizers considerable amounts of energy are set free which cause strong heating of the gas in the discharge chamber and of the electrodes themselves. The authors experimentally studied the effect of electrode temperature on ozone synthesis since publication data on this problem are insufficient and partly contradictory. The experimental installation was similar to a previously described apparatus (Ref. 8: Yu. V. Filippov, Yu. M. Yemel'yanov, Zh. fiz. khimii 31, 894, 1957; Ref. 9: V. P. Vendillo, Yu. M. Yemel'yanov, Yu. V. Filippov, Zavodsk. laboratoriya 25, 1401, 1959), and differed only by the device for cooling the electrodes of the ozonizer and keeping their temperature constant. Fig. 1 shows this device. It consists of two

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electrically isolated parts serving for the separate cooling of the inner and outer electrodes. Each part contains a spiral cooler (1, 6) which is immersed in a Dewar vessel filled with a mixture of acetone and dry ice and attached to a jack-screw for temperature control, a rotary pump (2, 5), and an alcohol thermometer (3, 4). All experiments were conducted at an oxygen pressure of 770 mm Hg, with current of a frequency of 1500 cps, and at temperatures of -40°, -20°, -10°, 0°, 10°, and 20°C. Rates of oxygen flow ranged from [illegible] to 125 l/hr for all these temperatures (except for 20°C). At 20°C, the equilibrium concentration of ozone was only determined. Table 1 shows electrical data during the operation of the ozonizer. The investigations showed that (1) only at relatively high values of the ratio F/v (F = volume of the discharge zone of the ozonizer, v = rate of oxygen flow by a volume) temperature strongly affects the ozone concentration; (2) concentrations of ozone up to 16 % can be obtained by cooling the electrodes and maintaining large U/v values. From Eq. (1) derived by S. S. Vasil'yev, N. I. Kobozev, and Ye. N. Yeremin (Ref. 12: Zh. fiz. khimii, 10, 619, 1936) the authors calculated the kinetic constants for formation and decomposition of ozone in the electric discharge:
$k_o + k_1 = v\ln(x_0/x_0 - x)/U$, $k_o = x_0(k_o + k_1)/a$ (1) (k_o = constant of

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Electrosynthesis of ozone ....

ozone formation; k_1 = constant of ozone decomposition; a = initial concentration of oxygen; x_0 = equilibrium constant of ozone; x = ozone concentration for a given U/v; U = active discharge power). The value for U was calculated theoretically (Ref. 13: Yu. M. Yemel'yanov, Yu. V. Filippov, Zh. fiz. khimii, 33, 1042, 1959). The calculation of the kinetic constants showed that $k_0 + k_1$ increases with increasing v. This indicates the effect of ozone diffusion along the gas current on the kinetics of ozone synthesis. A comparison of the mean values of the kinetic constants for various temperatures showed that the temperature only affects the decomposition constant of ozone which rises with temperature. The constant of ozone formation, however, does not change with temperature according to a law. k_1 obeys Arrhenius' law. From the inclination of the straight line in a diagram ($\log k_1$, 1/T) a value of 1800 cal/mole results for the activation energy of ozone decomposition. This small value indicates that the decomposition is not a thermal but a photochemical reaction. The diffusion processes may be another reason for the low value of the activation energy. A decision between these two possibilities may only be made by a

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detailed investigation of the mechanism of ozone electrosynthesis. The fact that, within the error limit of the experiment, k_o does not depend on temperature, undoubtedly proves that the activation of chemical reactions in electric discharges has a nonthermal character. N. Pushin and M. Kaukhcheva (Ref. 6: ZhRFKhO, 46, 576, 1914) are mentioned. There are 4 figures, 2 tables, and 17 references: 10 Soviet and 7 non-Soviet. The reference to the English-language publication reads as follows: I. Devins, J. Electrochem. Soc., 103, 400, 1956.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 4, 1960

Fig. 1. Scheme of the cooling system for the ozonizer electrodes.
Legend: See text of the abstract.
Legend to Table 1: * experiment conducted at v = 79 l/hr; ** experiment conducted at v = 29 l/hr; *** experiment conducted at v = 9 l/hr.

DANCHEVSKAYA, M.N.; PANASYUK, G.P.; KOKOZEV, N.I.

Mass-spectrometric method of studying the mechanism of methanol dehydrogenation in zinc vapors. Zhur.fiz.khim. 35 no.9:2125-2129 '61. (MIRA 14:10)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Methanol) (Dehydrogenation)

KRYLOVA, I.V.; OGAREV, V.A.; KOBOZEV, N.I. (Moscow)

Effect of the nature of gas on the photocatalytic activity of platinum catalysts. Zhur.fiz.khim. 35 no.10:2311-2315 O '61. (MIRA 14:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Photochemistry) (Catalysts) (Platinum)

28295 S/076/61/035/010/014/015
B106/B110

26.1610 (also 1208)

AUTHORS: Pitskhelauri, Ye. N., Semiokhin, I. A., and Kobozev, N. I.

TITLE: Reaction of hydrogen with oxygen in a silent electric discharge. II. Effect of specific energy and time of experiment

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 10, 1961, 2383 - 2386

TEXT: The authors studied the effect of the specific energy and the reaction time on the reaction of hydrogen with oxygen in a silent electric discharge. The experimental arrangement consisted of a reaction tube, a device for mixing the gases, a purification system, a current source for the reaction tube, and a measuring system. The reaction tube is described in detail and explained in the thesis by I. A. Semiokhin (Ref. 1: Kand. dis., MGU, 1952, str. 91). It had a cylindrical shape, and the electrodes were arranged coaxially. The inner electrode was made of aluminum (99.7% Al), had an outside diameter of 34 mm, and was cooled with water. The reaction zone was 900 mm long and had a volume of 614 cm^3 with an active electrode surface of 4466 cm^2. Electrolytic hydrogen and oxygen

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were used for the experiments. The oxygen concentration in the initial mixture was varied from 2 to 5% by volume, which corresponds to 33 - 83% of the explosive concentration in a hydrogen-oxygen mixture. A gas analyzer of the ВТИ (VTI) system was used to check the gas dosage. The current source was a ЗГ-2А (ZG-2A) audio-frequency generator with a ТУ-5-1 (TU-5-1) amplifier unit. The velocity of the water stream cooling the reaction tube was measured with an РС-5 (RS-5) rotameter. The power of the tube was calculated by the continuous "calorimetric" method described by S. S. Vasil'yev and Ye. N. Yeremin (Ref. 3: Uch. zap. MGU, 86, kn. 2, 68, 1946). The values of the specific energy u/v, i.e., the ratio of the power of discharge to the flow rate of the gas mixture through the tube, was varied in the experiments from 0.22 to 5.22 w per liter of gas mixture and per hour. The u/v ratio is very useful for comparing the efficiencies of various types of discharge which differ in power. A table shows the results of the determinations. The useful oxygen consumption γ is found to increase from 0.42 to 0.80 if the specific energy u/v is reduced from 5.22 to 0.24 w/liter/hr. The total oxygen consumption Δ decreases simultaneously from 0.92 to 0.21. The portion α of oxygen consumed for the formation of H_2O_2 passes through a maximum with a change of the

Card 2/ 3

11.1190

29988
S/076/61/035/011/012/013
B101/B110

AUTHORS: Semiokhin, I. A., Pitskhelauri, Ye. N., Kobozev, N. I., and Sindyukov, V. G.

TITLE: Interaction of hydrogen with oxygen during silent electric discharge. III. Effect of gas mixture composition and electrode material

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 11, 1961, 2633 - 2635

TEXT: The authors checked the differing publication data giving 96 - 97% H_2 + 4 - 3% O_2 and 80% H_2 + 20% O_2 as optimum for the yield of H_2O_2 during the reaction of H_2 with O_2 in silent discharge. Initial experiments with a change of the O_2 content from 60 - 80% to 2 - 3% showed that the useful consumption φ of O_2 strongly drops in explosive O_2 + H_2 mixtures. Determination of optimum composition at u/v = const was made (a) with 3 - 3.5% O_2; (b) with 4.2 - 5.2% O_2. Experiments were conducted in glass-aluminum reaction tubes as described by the authors in Zh. fiz.

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Interaction of hydrogen with oxygen...

khimii, 35, no. 10, 1961. The effect of admixtures (Ar, N_2, H_2O) and of all-glass reaction tubes, as well as nickel-plated or brass-plated electrodes, was investigated. Data are given in a table. It was found that: (1) at low concentrations Ar plays the part of an energetic catalyst; (2) N_2 greatly lowers the useful consumption of O_2; the H_2O_2 solution is strongly acid through nitrogen oxides developing; (3) heating of the electrodes to 70 - 72°C (p_{H_2O} ≈100 mm Hg) increased the oxygen consumption α for the formation of H_2O_2 as compared with the α for dry gas mixtures at equal temperature; (4) α and φ are highest in all-glass reaction tubes, higher than in glass-aluminum reaction tubes. A strong decrease of α and φ occurred in the case of nickel-plated or brass-plated electrodes. There are 1 table and 9 references: 2 Soviet and 7 non-Soviet. The two references to English-language publications read as follows: E. Noack a. O. Nitzschke, US Patent 1890793; L. Dawsey, US Patent 2169996 of May 15, 1936.

Card 2/K3

31186
S/076/61/035/012/006/008
B101/B138

S 2440

AUTHORS: Semiokhin, I. A., Kobozev, N. I., and Pitskhelauri, Ye. N.

TITLE: Interaction of hydrogen with oxygen in silent electric discharge. IV. Effect of increased pressure

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 12, 1961, 2780 - 2782

TEXT: The study was conducted at pressures of 1 - 3 atm. The reaction tube was supplied with audio frequency current by a TY-5-1 (TU-5-1) unit. Voltage was amplified by two HOM-10 (NOM-10) transformers connected in series, and measured by an electrostatic kilovoltmeter. The voltage was adjusted by means of a THH-45 (TNN-45) autotransformer. Discharge power was measured calorimetrically. The initial gas mixtures consisted of electrolytic H_2 and O_2. The liquid reaction products (H_2O and H_2O_2) were collected in a glass test tube at -60°C. Results are given in the Table. It follows from these data that: (1) Overall amount of O_2 used in H_2O_2 formation α, varies with varying pressure as also does the maximum, (2) O_2 consumption and H_2O yield decrease with increasing pressure. There

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are 4 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Moskovskiy Gos. universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 21, 1961

Table. Legend: (A) No. of experiment; (B) composition of initial gas mixture; (C) rate of gas flow, m^3/hr; (D) specific energy U/v, w/liter/hr; (E) Percentage yield from O_2 passed through, %; (F) efficiency of oxygen; (a) atm. gage pressure; (b) ma; (c) kv; (d) current frequency; (e) cps; (f) w.

S/020/61/141/002/016/027
B103/B110

AUTHORS: Tsentsiper, A. B., Yeremin, Ye. N., and Kobozev, N. I.

TITLE: Effect of hydrogen and argon on electrocracking of methane and ethylene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 2, 1961, 378-380

TEXT: The effects of hydrogen and argon on electrocracking of methane CH_4 and ethylene C_2H_4 were compared. The apparatus had been described by the authors (DAN, 141, no. 1 (1961)). The conversion degree A was determined on the basis of pressure changes. It was assumed that hydrocarbon mainly decomposes in two directions:

$$\text{hydrocarbon} \begin{cases} \rightarrow C_2H_2+H_2 \\ \rightarrow C+2H_2 \end{cases}$$

, with the change of volume remaining constant. The experiment was conducted as follows: At a certain partial pressure of hydrocarbon, H_2 or Ar were added up to a total pressure of 50 and 150 mm Hg. Next, the discharge was switched on (amperage: 300 ma) for a time

Effect of hydrogen and...

(τ) of 2, 3, 4, 5, 6, 8, 10, 20, 40, and 100 sec. After cooling the reaction vessel, the pressure was measured and the gas analyzed as soon as the conversion was approximately 50%. At a pressure of 40 mm Hg, the cracking rates of CH_4 and C_2H_4 were found to be approximately of the same magnitude. Ar or H_2 additions impede the cracking of these gases almost equally and the more so the higher the partial pressures of H_2 or Ar. At a total pressure of 150 mm Hg, cracking is reduced to about half its value. When reducing the pressure of initial CH_4 to 10 mm Hg and without admixtures the cracking rate of CH_4 is only 1/50 that of C_2H_4. C_2H_4 cracking is impeded by H_2 and also by Ar. If H_2 or Ar are added to CH_4, cracking is rapidly activated, and CH_4 cracks almost as fast as C_2H_4. Thus, also the discharge is changed. At a pressure of 40 mm Hg, the discharge shows a yellow, slightly blackening flame in pure hydrogen or in mixtures with H_2 or Ar. With CH_4 and at a pressure of 10 mm Hg, the discharge shows a bluish light which becomes intensely yellow as soon as H_2

Card 2/4

Effect of hydrogen and...

S/020/61/141/002/010/027
B103/B110

2 non-Soviet. The two references to English-language publications re... as follows: H. M. Stanley, A. W. Nash, J. Soc. Chem. Ind., 48, 238 (1929); I. H. Perril, W. C. Ewersoll, Ind. and Eng. Chem., 33, No. 10, 1316 (1941).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: June 7, 1961, by B. A. Kazanskiy, Academician

SUBMITTED: May 30, 1961

Card 4/4

KHYLOVA, I.V., kand. khim. nauk [translator]; KOBOZEV, N.I., prof., red.; MANUYLOVA, O.M., red.; POTAPENKOVA, Ye.S., tekhn. red.

[Exoelectronic emission] Ekzoelektronnaia emissia. Moskva, Izd-vo inostr.lit-ry, 1962. 306 p. (MIRA 15:5)
(Electrons—Emission)

NEKRASOV, L.I.; KOBOZEV, N.I.; KOMISSAROV, G.G.

Studying the adsorption of chlorophyll on organic and inorganic carriers. Biofizika 7 no.5:568-570 '62. (MIRA 17:8)

1. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

BALANDIN, A.A., akademik, red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., zam. red.; MAL'TSEV, A.N., zam. red.; AGRONOMOV, A.Ye., dots., zam. red.; TOPCHIYEVA, K.V., prof., red.; YUR'YEV, Yu.K., prof., red. PANCHENKOV, G.M., prof., red.; SOKOL'SKIY, D.V., akademik, red.; VOL'KENSHTEYN, F.F., prof., red.; LAZAREVA, L.V., tekhn. red.

[Catalysis in the institutions of higher learning; papers of the First Interuniversity Conference on Catalysis] Kataliz v vysshei shkole; trudy. Moskva, Izd-vo Mosk. univ. No.1. Pt.2. 1962. 325 p. (MIRA 15:10)

1. Moskovskoye soveshchaniye po kataliza. 1st, 1958. 2. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy). 3. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (for Yur'yev). (Catalysis)

BALANDIN, A.A., akad., red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., sam. red.; MAL'TSEV, A.N., dots., sam. red.; AGRONOMOV, A.Ye., dots., sam. red.; GROMOV, V.N., red.; LAZAREVA, L.V., tekhn. red.

[Transactions of the First Interuniversity Conference on Catalysis] Trudy Mezhvuzovskogo soveshchaniia po katalizu, 1st. Moskva, Izd-vo Mosk. univ. No.1. Pt.1. 1962. 475 p. (MIRA 16:7)

1. Mezhvuzovskoye soveshchaniye po kataliza. 1st. 2. Khimicheskii fakul'tet Moskovskogo gosudarstvennogo universiteta (for Balandin, Kobozev, Lebedev).

(Catalysis—Congresses)

37903

S/189/62/000/003/001/001
D214/D307

11.1920
11.1190

AUTHORS: Nekrasov, L.I., Kobozev, N.I., and Yeremin, Ye.N.

TITLE: Low temperature reactions of atoms and radicals (report II). The interaction of atomic hydrogen with H_2O_2

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II, Khimiya, no. 3, 1962, 24 - 25

TEXT: The reactions of atomic hydrogen with H_2O_2 in the vapor and solid states were studied at -196° C to explain the mechanism of dissociation of H_2O vapor induced by an electric discharge. This reaction only occurs in the gas phase, when an almost complete conversion of H_2O_2 into H_2O is achieved. The mechanism is described by $H_2O_2 + H \longrightarrow H_2O + OH + 45$ Kcal. and $OH + H \longrightarrow H_2O + 114.5$Kcal. The absence of a reaction between H atoms and solid H_2O_2 is attributed

Card 1/2

NEKRASOV, L. I.; KOBOZEV, N. I.; KOMISSAROV, G. G.

Magnetic and optical properties of chlorophyll adsorbed on capron. Vest. Mosk. un. Ser. 2: Khim. 16 [i.e. 17], no.6: 36-38 N-D '62. (MIRA 16:1)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.

(Chlorophyll) (Adsorption)

S/051/62/012/005/015/021
E075/E136

24,3500

AUTHORS: Krylova, I.V., Shashkov, A.S., and Kobozev, N.I.

TITLE: Investigation of crystallophosphors ZnS.Cu by the method of exoelectronic emission

PERIODICAL: Optika i spektroskopiya, v.12, no.5, 1962, 635-636

TEXT: A study was made of the influence of additions of Cu on the intensity of luminescence, exoelectronic emission and catalytic activity of ZnS. The phosphor samples were prepared from melt by heating in air at 800 °C. The emission was excited by X-rays and luminescence by ultraviolet light. Catalytic activity of the samples was measured by the decomposition of methanol between 300-350 °C. It was shown that non-activated ZnS gives comparatively weak emission. Small additions of Cu (7.5×10^{-6} and 7.5×10^{-4} g/g ZnS) give sharp emission maxima at 140 and 260 °C. The latter maxima were shown to correspond to maxima of catalytic activity at 330 °C. Thus the experiments demonstrated that the luminescence centres have a connection with the catalytic centres and exoelectronic emission, and that the

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KRYLOVA, I.V.; SHASHKOV, A.S.; KOBOZEV, N.I.

Study of catalysts by the method of exoelectron emission.
Zhur.fiz.khim. 35 no.11:2657-2660 N '61. (MIRA 14:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Catalysts)
(Electrons)

KOBOZEV, N.I. (Moscow)

Problem of the ordered and disordered forms of energy in chemical thermodynamics. Part 2: Equilibrium of Brownian-vectorial forms of energy in chemical thermodynamics. Zhur. fiz.khim. 35 no.12:2745-2750 D '61. (MIRA 14:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet.
(Chemistry, Physical and theoretical)

SEMIOKHIN, I.A.; KOBOZEV, N.I.; PITSKHELAURI, Ye.N.

Reaction of hydrogen and oxygen in a silent electrical discharge. Part 4: Effect of elevated pressure. Zhur.fiz.khim. 35 no.12: 2780-2782 D '61. (MIRA 14:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Electric discharges through gases)
(Hydrogen) (Oxygen)

S/076/62/036/001/003/017
B101/B102

AUTHOR: Kobozev, N. I.

TITLE: Thermodynamic factors in the kinetics of autocatalytic multiplication of simple and complex prototypes

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 1, 1962, 21-31

TEXT: A study has been made of the kinetics of multiplication under the effect of the following factors: 1) exhaustion of the substrate from which particles form; 2) establishment of equilibrium; and 3) destruction of particles. The number of forming particles is given by $\Phi = \Phi_0 / \left\{1 + \left[(\Phi_0 - n)/n\right] \exp(-\beta_1 M_0 t)\right\}$, where $\Phi_0 = M_0\left[K_I/(1 + K_I)\right]$ is the limit of multiplication, K_I is the equilibrium constant of multiplication, n is the initial number of particles, M_0 is the initial concentration of the substrate, and β_1 is the constant of the direct process. For $K_I = \infty$ one obtains Robertson's equation for autocatalysis or the logistic curve of Pearl. In the case of irreversible multiplication, $\Phi_0 = M_0 K_{III}$;

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Thermodynamic factors in the...

M_o = const. For $K_{III} \rightarrow \infty$ there occurs an unlimited, exponential pathological growth. The consecutive process of multiplication of complex prototypes (e.g. cells), accompanied by their destruction, is described by $d\xi/dt = \xi^m(\beta_1 M_o - \beta_2 \xi^{p-m})$, where m and p are the kinetic orders of generation and destruction, respectively; β_1 and β_2 are the constants of these processes. A limited growth occurs only if m is less than p. In this case, $\xi_o = (\beta_1 M_o/\beta_2)^{1/(p-m)}$. In the limiting case, the process passes over into the equilibrium state of growth which is limited by the thermodynamic potential of the final state. In contradistinction to the growth in physicochemical systems for which size and shape are unlimited, the limited size and the morphology of biological objects can be maintained only in the equilibrium state which occurs with reversible processes. The biological growth is regulated by the information and feedback between the initial and final states of the processes. I. I. Shmal'gauzen and V. V. Alpatov are mentioned. There are 2 figures and 15 references: 7 Soviet and 8 non-Soviet. The four most recent references to English-

Card 2/3

S/076/62/036/001/004/017
B101/B102

AUTHOR: Kobozev, N. I.

TITLE: Thermodynamic factors in the kinetics of autocatalytic multiplication of simple and complex prototypes. II. Thermodynamic conditions for normal and abnormal growth and multiplication

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 1, 1962, 32-41

TEXT: The biological growth has been studied under various thermodynamic conditions. The equilibrium constant K of the multiplication process is given by $K = \exp\left[(U_M - TS_M)/RT\right] \cdot \exp\left[-(U_\Phi - TS_\Phi/RT)\right]$, where $U_M - TS_M$ is the free energy potential, φ_M, of the initial substrate M (potential of growth), and $U_\Phi - TS_\Phi = \varphi_\Phi$ is the free energy potential of the growth product Φ (retarding potential). For a constant substrate one obtains $K = K_o \exp(-U_\Phi/RT) \cdot \exp(S_\Phi/R)$, and the limit of growth increases with rising entropy of the growing prototype. Many processes take place with an

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Thermodynamic factors in the kinetics...

insignificantly varying total energy. For this reason, $K = K_0 \exp(S_\Phi/R)$ and $\Phi_0 = M_0 K_0 \exp(S_\Phi/R)$ (M_0 = initial concentration of substrate, Φ_0 = limit of growth) can be written for S_M = const. It follows therefrom that the probability of a transition to an unlimited, exponential growth rises with increasing entropy of the multiplying prototypes. Since no data are available for a comparison between the entropy of normal cells and that of malignant ones, the notion of "biological entropy" is introduced, which is defined as the degree of disorder and variability of the cell properties. E. Cowdry has shown in his book "Cancer Cells" that cancer cells have an increased biological entropy. The irreversible process of multiplication entails interruption of information and feedback, and can no more be regulated cybernetically. Shannon's equation for the entropy of information, which might be suitable for the calculation of the biological entropy, is mentioned in connection herewith. Between the entropy S_c of a normal cell and the entropy S_0 of a malignant one there exists an intermediate state with reduced entropy $\vec{S}$: $S_c > \vec{S} < S_0$. Introduction of the notion of negative entropy (negentropy) according to Schrödinger furnishes

Card 2/3

32636
S/076/62/036/001/006/017
B101/B102

11.1220
11.6100

AUTHORS: Semiokhin, I. A., Kobozev, N. I., and Pitskhelauri, Ye. N.

TITLE: Reaction of hydrogen with oxygen in silent electric discharge. V. Kinetic analysis of the process according to equations of irreversible consecutive reactions of the first order

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 1, 1962, 72-80

TEXT: The purpose of this study was to ascertain whether the reaction of H_2 with O_2 in a silent electric discharge satisfies the system of equations for consecutive reactions: $H_2 + O_2 \longrightarrow H_2O_2$; $H_2O_2 \longrightarrow H_2O + O$. In a silent electric discharge the process is irreversible owing to the low current density, energy, etc. Since the O_2 content of the gas mixture was kept at 5 % to prevent explosions, it may be assumed that $[H_2]$ = const. Previous papers of N. I. Kobozev et al. (Zh. fiz. khimii, 34, 773, 1960; ibid., 35, 2382 and 2633, 1961) suggest the existence of

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Reaction of hydrogen with oxygen...

from $(U/v)_{max} k_2^0 - 2.3 \log k_2^0 = C$; $C = (U/v)_{max} k_1^0 - 2.3 \log k_1^0$. The values calculated therefrom for α^0 of all-glass reaction vessels are in good agreement with experimental data. For reaction vessels made of metal and glass one obtains $\alpha_{exp} < \alpha^0$. There are 5 figures, 6 tables, and 4 references: 3 Soviet and 1 non-Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: August 11, 1960

Card 3/3

KOBOZEV, N. I.

32637
B/076/62/036/001/007/017
B107/B110

11.1510

AUTHORS: Skorokhodov, I. I., Colubev, V. B., Nekrasov, L. I., Yevdokimov, V. B., and Kobozev, N. I.

TITLE: The higher hydrogen peroxide in frozen radicals. V. Electron paramagnetic resonance study of peroxide radical condensate

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 1, 1962, 25 - 27

TEXT: The synthesis of the radical HO_2 either from dissociated water vapor or on reaction between pure ozone and atomic hydrogen at -196°C has been studied by the e.p.r. method. The purpose of the investigation was to check published data (Ref. 1, see below; Ref. 2: A. I. Gorbanev, S. D. Kaytmazov, A. M. Prokhorov, A. B. Tsentsiper, Zh. fiz. khimii, 31, 515, 1957; Ref. 3, see below; Ref. 9: S. D. Kaytmazov, A. M. Prokhorov, Zh. fiz. khimii, 34, 227, 1960) and to establish the maximum HO_2 concentration possible. The resonance spectra of both peroxide-radical condensates exhibit asymmetric maxima at 9000 Mc/sec, irrespective of the method of synthesis. The asymmetry is due to the anisotropy of the g-factor which

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The higher hydrogen peroxide...

amounts to 2.00). The line width is about 75 oe. Synthesis from dissociated water vapor has shown that the ratio of unpaired electrons to the number of H_2O_2 molecules remaining after the decomposition of the condensate varies from 0 to 0.007, which agrees well with Ref. 1 (0.0065). The divergence from the value given in Ref. 2 (0.004) is explained as follows: The condensate is separated in the cooling trap in the form of two rings, one slightly above the level of liquid nitrogen, which is white and contains about 52% H_2O_2 but no HO_2, while the other below the level is yellowish and contains about 54% H_2O_2 and the radical HO_2. At -110°C, the second ring turns white and the paramagnetic absorption diminishes. Synthesis from pure ozone and atomic hydrogen has shown that the ratio of unpaired electrons to the number of H_2O_2 molecules remaining after the decomposition of the condensate varies from 0.007 to 0.00). From the paramagnetic resonance spectrum alone it is not possible to decide whether the radical HO_2 or the hydroxyl OH is present. The presence of the perhydroxyl HO_2 is, however, supported by the following facts: The gamma spectrum of ice contains a symmetric doublet at -196°C (Ref. 13, see

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The higher hydrogen peroxide...

below); the resonance spectrum of the condensate in question resembles the gamma spectra of organic compounds, such as Teflon, polyethylene, etc., which contain the radical C-O-O', as well as the spectrum of the potassium peroxide K-O-O'; when the yellow ring becomes colorless between -110 and -100°C, 3 - 4% by weight of oxygen is separated. The value calculated for the recombination of the radical OH to H_2O and O_2 is 1 - 1.5% by weight, while that for $HO_2 \rightarrow H_2O_2 + O_2$ is 2.5 - 3% by weight. The presence of HO_2 is therefore very probable. The maximum concentration obtained from the measurements amounts to 0.4% by weight. There are 18 references: 10 Soviet and 8 non-Soviet. The four most recent references to English-language publications read as follows: Ref. 1: R. L. Livingston, J. A. Chomley, H. Zeldes, J. Chem. Phys., 24, 489, 1956; Ref. 3: C. K. Jen, S. N. Foner, E. L. Cochran, V. A. Bowers, Phys. Rev., 112, 1169, 1958; Ref. 15: J. M. Flournoy, L. H. Baum, S. Siegel, S. Scolnik, The fourth international Symposium of free radical stabilization, V, 1958; H. M. Rexrond, W. Gordy, Bull. Amer. Phys. Soc., 1, 200, 1956.

Card 3/4

32637
S/076/62/036/001/007/011
B107/B110

The higher hydrogen peroxide...

ASSOCIATION: Moskovskiy gos. universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 5, 1960

Card 4/4

L 13511-63 EPF(c)/EWT(l)/EWT(m)/BDS AFFTC/ASD Pr-4 WW
ACCESSION NR: AT3002352 S/2952/62/001/002/0153/0158
67
69

AUTHORS: Kobozev, N. I.; Kryłova, I. V.

TITLE: Catalysts as photosensitive systems

SOURCE: Kataliz v vysshey shkole; trudy* I Mezhvuzovskogo soveshchaniya po kataliza, no. 1, pt. 2. Moscow, Izd-vo Mosk. univ., 1962, 155-158

TOPIC TAGS: catalyst, platinum, H sub 2 O sub 2, photocatalytic effect, N sub 2, palladium, Ar

ABSTRACT: The effect of irradiated light on the activity of metallic platinum catalyst has been studied. The decomposition of H_2O_2 was used as a controlling process. The metal was studied in various dispersion forms as black powders or in an adsorbed from on various carriers. Photocatalytic effect was observed in in both metallic and adsorbed catalysts. In case of platinum this effect consists in the decrease of catalytic activity after its irradiation with light. The decrease of activity is greater when the catalyst is irradiated in an inert atmosphere of N_2 and Ar, and smaller when it is irradiated with light in hydrogen atmosphere. It is suggested that the decrease in activity of platinum catalysts takes place by means of ionization of Pt atoms and the strengthening of the

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ACCESSION NR: AT3002352

valence electron trapped at the carrier level. In case of the irradiated palladium catalysts whereby the activity is increased, the explanation is that the electron transfer leads to the origination of two unpaired electrons at the palladium atom, in which case its catalytic activity is higher. The photocatalytic effect on Pt catalysts greatly depends on the electrical properties of the carrier. The greater the restricted zone of the carrier (or dielectrics), the greater is the probability of ionization of the Pt atoms which are adsorbed on this carrier, and conversely, with a decrease in the width of the restricted zone, the possibility of the electronic transfer between the carrier and the adsorbed platinum increases. Thus, the probability of the return of the valence electron to the platinum atom also increases. In accordance with this the greater decrease of activity through irradiation with light is observed in the case of platinum on silicagel and the smallest activity is observed in case of platinum black. Orig. art. has: 3 figures.

ASSOCIATION: Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (Department of Chemistry, Moscow State University)

SUBMITTED: 00 DATE ACQ: 10Jun63 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 002

Card 2/2

33691
S/076/62/036/002/002/009
B119/B101

11.1120
11.1310
11.1190

AUTHORS: Skorokhodov, I. I., Nekrasov, L. I., Kobozev, N. I., and Yevdokimov, V. B. (Moscow)

TITLE: Problem of higher peroxides of hydrogen and frozen radicals. VI. Investigation of the magnetic properties of peroxide radical condensates

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 2, 1962, 274 - 281

TEXT: The authors studied the magnetic properties of peroxide radical condensates synthesized both from dissociated water vapors and from the reaction of atomic hydrogen with liquid 100% ozone by methods already described (Zh. fiz. khimii, 31, 1843, 1957; ibid., 32, 87, 1958). The magnetic susceptibility was determined by the method of comparison with water as gauge substance (measurement of weight increase in the magnetic field) between -150 and +20°C. Below -110°C, peroxide radical condensates are weakly diamagnetic; their susceptibility is $-0.1 - -0.2 \cdot 10^{-6}$ cgsm. The paramagnetism of the system increases with the temperature owing to free oxygen (neither adsorbed nor occluded) forming from

Card 1/2

Card 2/2

11.1120
11.1190

S/076/62/036/003/001/011
B101/B108

AUTHORS: Kobozev, N. I., Semiokhin, I. A., and Pitskhelauri, Ye. N.

TITLE: Interaction of hydrogen with oxygen in a corona discharge. VII. The mechanism of the process

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 3, 1962, 443 - 448

TEXT: On the basis of previous experimental and theoretical work (Zh. fiz. khimii, 35, 2633, 1961; 36, 72, 336, 1962) the positive catalytic action of water vapor and argon on the formation of H_2O_2 and ozone is discussed. Using Ar as a catalyst offers the following advantages over water vapor: (1) no high temperature is required; this facilitates the design of the reaction vessel, (2) the hazard of an explosion of the mixture $H_2 + O_2$ is minimized, (3) the same quantity of Ar can circulate continuously because condensation does not occur. To explain the catalytic action of Ar the authors discuss the change of the reaction constants in $O_2 \xrightarrow{k1} H_2O_2$ and $H_2O_2 \xrightarrow{k2} H_2O$ by a value $r = f(C_{Ar})$ assuming $r_1 = r_2 = r$, $r_1 < r_2$, and $r_1 > r_2$.

Card 1/3

SUBMITTED: August 1[illegible], 1961

Card 3/3

11.1220
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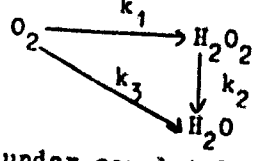
33694
S/076/62/036/002/005/009
B119/B101

AUTHORS: Semiokhin, I. A., Kobozev, N. I., and Pitskhelauri, Ye. N. (Moscow)

TITLE: Interaction of hydrogen and oxygen during a silent electric discharge. VI. Kinetic analysis of the process from the equations for irreversible parallel-consecutive reactions of first order

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 2, 1962, 336 - 344

TEXT: The kinetics of the processes which take place during a silent discharge in glass - metal tubes according to



(k_1, k_2, k_3 being reaction rate constants), were studied under completely different conditions and were then calculated. Power U of discharge: 10 to 1458 watts, current intensity: 3.5 to 425 ma, voltage:

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Interaction of hydrogen and oxygen...

6 to 15 kv, current frequency: 50 to 8500 cycles, rate v of flow of the gas mixture: 1 - 1400 liters/hr, degree of total oxygen consumption: 0.03 - 1.0, effective oxygen consumption: 0.06 - 1.0, H_2O_2 concentration in the gaseous phase expressed in parts of the initial oxygen concentration: 0.02 - 0.52. The reaction follows the scheme of an irreversible parallel-consecutive reaction of first order. The constants calculated as functions of the specific energy, are independent of changes of experimental conditions. For the quantitative calculation of such reactions in the gaseous phase from kinetic equations, it is therefore possible to substitute U/v for t (time). The process taking place in the gaseous phase is caused by the discharge and corresponds to the formation and subsequent decomposition of H_2O_2. The immediate formation of H_2O from hydrogen and oxygen is independent of the discharge and is due to the catalytic effect of the electrode metal. This side reaction can be eliminated by the use of ozone generators made of glass only, or by electrodes consisting of 100% Al. (When using 99.7% Al, the rate constant k_3 of this reaction is 0.12, with 99.99% Al it is 0.08). There are 5 figures, 2 tables, and 3 Soviet references.

Card 2/3

DANCHEVSKAYA, M.N.; KOBOZEV, N.I.; MOISEYEV, Yu.V.

Catalysis by metal vapors. Part 2. Zhur.fiz.khim. 36 no.10: 2176-2182 O '62. (MIRA 17:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

STRAKHOV, B.V.; LEBEDEV, V.P.; KOBOZEV, N.I.

Physical chemistry of concentrated ozone. Part 9. Zhur. fiz. khim. 36 no.11:2388-2392 N'62. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

BYLINA, E.A.; YEVDOKIMOV, V.B.; KOBOZEV, N.I.

Magnetic susceptibility of platinum catalysts. Zhur. fiz. khim. 36 no.11:2552-2556 N'62. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ACCESSION NR: AT4028328 S/0000/63/000/000/0023/0029

AUTHOR: Kobozev, N. I.; Semiokhin, I. A.; Pitskhelauri, Ye. N.

TITLE: Electrosynthesis of pure concentrated hydrogen peroxide

SOURCE: Soveshchaniye po khimii perekisny*kh soyedineniy. Second, Moscow, 1961. Khimiya perekisny*kh soyedineniy (chemistry of peroxide compounds); Doklady* soveshchaniya. Moscow, Izd-vo AN SSSR, 1963, 23-29

TOPIC TAGS: electrosynthesis, hydrogen peroxide, ozonizer, ozone, argon, glass, quartz, aluminum

ABSTRACT: In this paper the authors conduct a study of the effect of phydical-chemical parameters on the process of electrosynthesis of hydrogen peroxide from elements, for the purpose of explaining the optimal conditions for obtaining pure concentrated hydrogen peroxide. The investigation was conducted with ozonizers of different types and sizes. The effect of the temperature, flow velocity, composition and pressure of gas mixture, magnitude of discharge and the electrode material on the material and energy yields of hydrogen peroxide were studied. A schematic of the installation is given. Graphs of the results are presented. It was found that a temperature drop in the ozonizer affects an increase in yield and concentration

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ACCESSION NR: AT4028328

of hydrogen peroxide. Additives of argon in small concentrations (about 1%), or water vapor lead to an increase in material and energy yields of hydrogen peroxide. Glass, quartz, and aluminum with a purity of more than 99.7% are recommended as suitable materials for ozonizer electrodes. An increase of pressure up to 2 atmospheres shows no effect on the energy and material yield of hydrogen peroxide. An increase up to 3 atmospheres causes a decrease in the yield and concentration of hydrogen peroxide. It appears that as a result of changing the power and productivity of the ozonizer, the most characteristic parameter for comparing the effectiveness of the discharge action is the magnitude of the specific energy U/v (kilowatt/meter^3/hr) with the decrease of which the energy yield and concentration of hydrogen peroxide increases. Orig. art. has: 5 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova (Moscow State University).

SUBMITTED: 13Dec63 DATE ACQ: 04Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 006 OTHER: 005

Card 2/2

ACCESSION NR: AT4028329 S/0000/63/000/000/0030/0037

AUTHOR: Semiokhin, I. A.; Kobozev, N. I.; Pitskhelauri, Ye. N.

TITLE: The kinetics and mechanism of electrosynthesis of hydrogen peroxide

SOURCE: Soveshchaniye po khimii perekisny*kh soyedineniy. Second, Moscow, 1961. Khimiya perekisny*kh soyedineniy (chemistry of peroxide compounds); Doklady* soveshchaniy. Moscow, Izd-vo AN SSSR, 1963, 30-37

TOPIC TAGS: kinetics, electrosynthesis, hydrogen peroxide, water vapor, argon, oxygen, ozone

ABSTRACT: The authors claim that the kinetics of electrosynthesis of hydrogen peroxide in an all-glass reactor are satisfactorily described by equations of sequential irreversible reactions of the first order. Electrosynthesis of H_2O_2 in glass-metal reactors is in accordance with the scheme of parallel sequential irreversible reactions of the first order. The actual electro-gas processes, dependent on the existing regime in the discharge, are in fact formation and dissociation reactions of hydrogen peroxide. It is found that water vapor and particularly argon are actually energy catalysts of the electrosynthesis of hydrogen peroxide which under predetermined conditions accelerate one formation reaction of hydrogen

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ACCESSION NR: AT4028329

peroxide. The authors discuss the mechanism of hydrogen peroxide formation in which a substantial role is ascribed to the dissociation of hydrogen molecules and the formation of an "electron bedding" on the walls of the reactor which increase sharply the absorption potential of oxygen. Such a "bedding" may replace the cold wall necessary for the formation of hydrogen peroxide. The possibility of interaction of the hydrogen atoms with ozone on the "electron bedding" as well as in the gaseous phase is also considered. Orig. art. has: 19 formulas, 1 table and 3 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 13Dec63 DATE ACQ: 06Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 007 OTHER: 003

Card 2/2

S/189/62/000/006/001/006
D214/D307

AUTHORS: Nekrasov, L.I., Kobozev, N.I. and Komissarov, G.G.

TITLE: Magnetic and optical properties of chlorophyll adsorbed on caprone

PERIODICAL: Moscow, Universitet. Vestnik. Seriya II. Khimiya, no. 6, 1962, 36-38

TEXT: This is a study of the adsorption of chlorophyll on to a powdered caprone and of the magnetic and optical properties of the adsorbed pigment. The adsorbed isotherm, which exhibits two distinct stages, is similar to the isotherms obtained previously for chlorophyll adsorbed on alumina and silica gels. Initially, the pigment molecules are adsorbed by their flat sides (first stage); on further adsorption they begin either to form multilayers or to reorientate themselves into an edgewise position (2nd stage). Magnetic susceptibility measurements show the adsorbed chlorophyll to be paramagnetic. As the surface concentration of the pigment (a) increases, the susceptibility decreases to a minimum and rises again.

Card 1/2

Magnetic and optical ...

S/109/62/000/006/001/006
D214/D307

The minimum susceptibility corresponds to a at which multilayers begin to form or reorientation sets in (a ~ 0.45 μm/g). The coefficient of reflection (R) falls sharply as a increases (λ = 665-667 mμ) up to the point where multilayers or reorientation begin. At higher surface concentrations, an increase in a reduces R slightly. There are 3 figures.

ASSOCIATION: Kafedra fizicheskoy khimii (Department of Physical Chemistry)

SUBMITTED: August 14, 1961

Card 2/2

S/189/63/000/001/004/008
D204/D307

AUTHORS: Shashkov, A. S., Krylova, I. V. and Kobozev, N. I.

TITLE: A study of the sintering of silver black by exoelectronic emission

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 1, 1963, 18-22

TEXT: The aim of the present work was the study of catalytic and emissive properties of silver black in dependence on temperature and previous thermal treatment. Ag black was obtained by the reduction of A_5NO_3 with ammoniacal hydrazine sulfate at 0°C, and was fired in H_2 in the temperature range 50 - 650°C. The catalytic activity was assessed by the decomposition reaction of H_2O_2, at 20, 30 and 40°C; the energies of activation corresponding to variously pre-treated Ag catalysts were also measured. The catalytic activity of Ag black was found to decrease as the firing temperature was raised to ~250°C, remained constant for firing temperatures

Card 1/2

A study of the sintering ... S/189/63/000/001/004/008
D204/D307

of ~250° to 550°C, and fell sharply in specimens fired at higher temperatures. The energies of activation were respectively ~5500 cal/mole and ~7000 cal/mole for specimens fired at 50 - 250°C and 250 - 600°C. The exoelectronic emission increased slightly between 50 and 250°C, (for specimens fired at 200 and 250°C), and increased further between 250 and 550°C, the sharpest emission peak appearing at 550°C. The emission fell sharply at higher temperatures. Measurements of magnetic susceptibility on catalysts fired at different temperatures showed also that increased emissivity is connected with reduced diamagnetism. It is suggested that at low temperatures the catalysts contain a high proportion of an amorphous, chemically active atomic phase covering the crystals. After firing and exposure to air, a surface film of AG_2O is formed. The surface concentration of this active phase is reduced after firing to 50 - 250°C, whilst catalysts fired at 300 - 500°C possess a finely crystalline surface with a small proportion of the atomic phase. The crystals become coarser at 550°C, decreasing the specific surface of the catalyst. There are 5 figures.

Card 2/3

A study of the sintering ... S/189/63/000/001/004/008
D204/D307

ASSOCIATION: Kafedra fizicheskoy khimii (Physical Chemistry Department)

SUBMITTED: February 12, 1962

Card 3/3

S/189/63/000/002/003/010
A057/A126

AUTHORS: Nekrasov, L.I., Kobozev, N.I., Yeremin, Ye.N.

TITLE: Low-temperature reactions of atoms and radicals. Communication III. Dissociation of water vapors in an electric glow discharge

PERIODICAL: Vestnik Moskovskogo universiteta, Seriya II, Khimiya, no. 2, 1963, 17 - 19

TEXT: The authors demonstrated in an earlier paper (Vestn. Mosk. un-ta, ser. khimii, no. 12, 1960, 12) the effect of the construction and temperature of the collector for the products upon the dissociation of water vapor in a glow discharge. The effect was controlled by the yield and concentration of hydrogen peroxide and the yield of water, hydrogen and oxygen. In continuation of these studies, the effect of flow rate and pressure on the H_2O dissociation and the following reactions were investigated in the present work. The same apparatus and technique were used as in the former work. The results obtained on the effect of the vapor pressure are in good agreement with data presented by W.K. Rodebush et al. (J. Am. Chem. Soc., v.59, 1939, 1924) showing a decrease of the peroxide

yield with rising pressure (from 0.3 to 1.5 torr) and no considerable change of the water yield. In correspondence with the obtained kinetic curves of the yield the authors assume three principal stages in the reaction: In the first stage there occurs a dissociation of water vapors in the electric discharge, in the second a recombination of the atoms and radicals, whose transformations occur in the third stage directly on the cooled surface of the collector. There are 3 figures.

ASSOCIATION: Kafedra fizicheskoy khimii (Department of Physical Chemistry)

SUBMITTED: March 23, 1961

YEGOROV, V.P.; LEBEDEV, V.P.; KOBOZEV, N.I.

Physical chemistry of concentrated ozone. Part 14. Zhur. fiz. khim. 37 no.4:922-924 Ap '63. (MIRA 17:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

SEMIOKHIN, I.A.; KOBOZEV, N.I.; PITSKHELAURI, Ye.N.

Electrosynthesis of ozone from oxygen at elevated pressures.
Vest. Mosk. un. Ser. 2: Khim. 18 no.3:37-40 My-Je '63.
(MIRA 16:6)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Ozone) (Oxygen)

S/0000/63/000/000/0041/0045

ACCESSION NR: AT4028330

AUTHOR: Kobozev, N. I.; Nekrasov, L. I.; Skorokhodov, I. I.

TITLE: Mechanism of low temperature formation of hydrogen peroxide

SOURCE: Soveshchaniye po khimii perekisnykh soyedineniy. Second, Moscow, 1961. Khimiya perekisnykh soyedineniy (chemistry of peroxide compounds); Doklady* soveshchaniy. Moscow, Izd-vo AN SSSR, 1963, 41-45

TOPIC TAGS: hydrogen peroxide, low temperature formation, nascent hydrogen, ozone, oxygen, hydrogen, hydroxyl radical, water

ABSTRACT: This paper proposes a scheme for low temperature reactions of atomic hydrogen with oxygen. The authors explain the research of interaction of nascent hydrogen with oxygen at low temperatures with the formation of hydrogen peroxide and water as a final product. The paper claims that, in addition to water and hydrogen peroxide, the primary products also contain free frozen HO_2 radicals and H_2O_4 compound, the higher peroxide of hydrogen. The concentration of HO_2 radicals in condensates is small and in the best cases attains only 0.4 wt-%. The HO_2 and H_2O_4 radicals can be maintained only at temperatures of less than -120°C. At higher temperatures the latter break down into hydrogen peroxide and oxygen. If hydrogen

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ACCESSION NR: AT4028330

peroxide is formed in the heterogeneous mechanism through the HO_2 radical, then the formation of water occurs basically in the gaseous phase or through OH radicals or oxygen atoms. The proposed scheme reflects the basic outlines of the process of hydrogen peroxide formation at low temperatures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 13Dec63 DATE ACQ: 06Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 009 OTHER: 017

Card 2/2

ACCESSION NR: AT4010612 S/3051/63/000/000/0192/0196

AUTHOR: Li, Wen-chou; Kobozev, N. I.; Mal'tsev, A. N.

TITLE: Effect of ultrasound on the genesis and properties of heterogeneous catalysts

SOURCE: Kataliticheskiye reaktsii v zhidkoy faze. Trudy* Vsesoyuznoy konferentsii. Alma-Ata, 1963, 192-196

TOPIC TAGS: catalyst, heterogeneous catalyst, hydrogenation, catalytic hydrogenation, ultrasound, platinum black

ABSTRACT: The authors studied the effect of ultrasound on the formation, activity and physical properties of crystalline platinum black prepared by the reduction of aqueous H_2PtCl_6, either with formaldehyde in an atmosphere of nitrogen, hydrogen or air and a 20, 548 or 3000 kcps ultrasonic field, or with hydrogen in a 548 kcps ultrasonic field. They also did some work with a catalyst prepared by the hydrogenation of H_2PtCl_6 adsorbed on alumina gel. Catalytic activity was assayed in three different reactions: the breakdown of H_2O_2, the hydrogenation of hexene-1 and the oxidation of ethanol to acetic acid. Although ultrasound has no effect on the activity of preformed catalysts, it significantly increased the activity of platinum black prepared by reduction of H_2PtCl_6 with formaldehyde in an ultrasonic

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ACCESSION NR: AT4010612

field, the best results being obtained at high frequencies (3000 kcps) and in a nitrogen atmosphere; in air, the catalytic activity was decreased. A similar effect was obtained with catalysts prepared by reduction of H_2PtCl_6 with hydrogen, only here the catalytic activity and beneficial effect of ultrasound increased with a decrease in the H_2PtCl_6 concentration. A study of the physical properties of the formaldehyde preparation showed that the presence of an ultrasonic field during the reduction process increases the surface area of the catalyst about 30% and significantly increases its paramagnetism; analysis of the specific activity, however, showed that the increase in surface area cannot account for the increased catalytic activity. The mechanism of action and structure of platinum black catalysts are discussed at length. Orig. art. has: 2 tables and 1 graph.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 00 DATE ACQ: 25Jan64 ENCL: 00

SUB CODE: CH NO REF SOV: 005 OTHER: 000

Card 2/2

ACCESSION NR: AT4010622 S/3051/63/000/000/0454/0459

AUTHOR: Yemel'yanova, G.Y.; Lebedev, V.P.; Kobozev, N.I.

TITLE: Low-temperature catalytic decomposition of liquid ozone

SOURCE: Kataliticheskiye reaktsii v zhidkoy faze. Trudy* Vsesoyuznoy konferentsii. Alma-Ata, 1963, 454-459

TOPIC TAGS: cryogenics, ozone, liquid ozone, ozone decomposition, low-temperature ozone decomposition, catalytic decomposition, low-temperature catalyst, heat transfer, thermodynamics

ABSTRACT: Platinum, palladium, and silver black, Fe, Fe_2O_3, Cu, CuO, NiO and Ni_2O_3 were tested for use as catalysts in the decomposition of liquid ozone. Platinum and palladium proved the most active in the decomposition of liquid ozone at -195.8 and -183C. On the basis of the results with platinum and palladium as catalysts, the authors concluded that decomposition of ozone in a liquid state is a purely catalytic process in which no chain mechanism is involved, except on the metallic surface. Decisive in the decomposition is the exothermic energy transfer in the absorptive layer of ozone in the catalyst. In roentgenographic, spectroscopic, and magnetic studies of the effect of the

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ACCESSION NR: AT4010622

oxygen on the catalytic surface, the presence of oxides produced in a chemical interaction was not detected. Tests on ozone in a gaseous state at room temperature showed that the oxides, notably NiO and Ni_2O_3, are more active than Pt, Pd and Ag as catalysts. Orig. art. has: 6 chemical formulas and 3 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova (Moscow State University)

SUBMITTED: 00 DATE ACQ: 25Jan64 ENCL: 00

SUB CODE: GC NO REF SOV: 013 OTHER: 001

Card 2/2

MAL'TSEV, A. N.; KOBOZEV, N. I.; AGRONOMOV, A. Ye.; VORONOVA, L. V.

Effect of the size of granule carrier on the macroscopic distribution of platinum in adsorption catalysts. Zhur. fiz. khim. 37 no. 3:628-633 Mr '63. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 16923-63 EPF(c)/EWT(l)/EWT(m)/BDS/ES(w)-2 AFFTC/ASD/SSD Pr-4/Tab-4
RM/WW S/076/63/037/004/013/029

AUTHOR: Tsentsiper, A. B., Yeremin, Ye. N., Kobozev, N. I.

TITLE: The study of the conversion of hydrocarbons into acetylene in the electrical discharge in a static system. I. Comparative study of the conversion rates of methane, ethane, propane, ethylene, and propylene

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 835-841

TEXT: The conversion of methane, ethane, propane, propylene, and ethylene in a discharge are investigated. The basic element of the testing unit was a reactor composed of a round-bottom flask with two brass electrodes and with internal water cooling. The distance between electrodes was set at 9 mm. The current was varied between 50-600 ma and the pressure of the hydrocarbons between 10-150 mm of mercury. There are two types of discharge which differ sharply in their conversion rates. Change from one type to the other takes place with a change in pressure and in current density. The conditions under which the transition takes place are different for methane and the other hydrocarbons. During the active (glowing) discharge the main direction of the decomposition process for the hydrocarbons, as for the methane, lies in the formation of acetylene;

Card 1/2

L 2923-63

S/076/63/037/004/013/029

The study of the conversion of hydrocarbons into...

ethylene is produced in small amounts. The activity of the chemical action of the discharge may be characterized by the energy efficiency, which is proportional to the amount of hydrocarbon reacting per unit of energy expended. The energy efficiency of the active form of the discharge is approximately the same for all the hydrocarbons which were investigated. There are 2 tables and 2 figures. The most important English-language reference reads as follows: E. G. Linder, A. P. Davis, J. Phys. Chem., 35, 3649, 1931.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: April 24, 1962

Card 2/2

L 16934-63 EPR/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC/AFGC Ps-4/Pr-4 HW/
WW/JD/JW/JWD/H

S/076/63/037/004/025/029

AUTHOR: Yegorov, V. P., Lebedev, V. P., Kobozev, N. I.

TITLE: Physical chemistry of concentrated ozone. XIV. Interaction of ozone with hydrogen peroxide at low temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 922-924

TEXT: Tests were conducted to determine the possibility of a reaction in the case of the low temperature interaction of ozone with hydrogen peroxide with the formation of a higher peroxide of hydrogen. Two series of tests were conducted: 1) bubbling pure ozone through a cooled 60% peroxide, and 2) freezing pure ozone at the temperature of liquid nitrogen on preliminarily pulverized solid peroxide and holding the resulting mixture for a long period of time (up to 76 hours). In bubbling the 100% ozone through the concentrated (60%) peroxide there is a partial decomposition of the peroxide which increases as the temperature of the solution goes up. In the case of the condensation of pure ozone no action was detected on the pulverized solid peroxide. There is 1 chart. The most important English-language source reads as follows: D. H. Volman, J. Chem. Phys., 14, 707, 1946.

Association: Moscow State University imeni M. V. Lomonosov

Card 1/2

TSENTSIPER, A.B.; YEREMIN, Ye.N.; KOBOZEV, N.I. (Moscow)

Conversion of hydrocarbons to acetylene in the electric discharge in a static system. Part 2. Zhur. fiz. khim. 37 no.5:1063-1068 My '63. (MIRA 17:1)

L 12700-63 EPF(c)/EWT(m)/BDS Pr-4 RM/WW

ACCESSION NR: AP3002927 S/0076/63/037/006/1264/1269

AUTHOR: Tsentsiper, A. B.; Yeremin, Ye. N.; Koborgy, N. I.

TITLE: Conversion of hydrocarbons to acetylene in an electric discharge in a static system. 3. Study of electrocracking of methane, ethane, and propane to acetylene in the arc.

SOURCE: Zhurnal fizicheskoy khimii, v. 37, no. 6. 1963, 1264-1269

TOPIC TAGS: hydrocarbon, acetylene, electrocracking, methane, ethane, propane

ABSTRACT: The kinetics and energetics of the conversion of methane, ethane, and propane to acetylene under conditions of the active forms of the discharge have been investigated. In all cases, the chief reaction products are acetylene and hydrogen. A general kinetic scheme has been applied to these hydrocarbons, and an explanation has been given of the kinetic stability of acetylene which results in its being a major cracking product. The concentrations of acetylene (up to 26%) obtained in the electrocracking of methane homologs are much greater than the respective concentrations in the electrocracking of methane (up to 20%), the consumption of energy being diminished. Orig. art. has: 3 tables, 4 equations, and 3 figures.

Association: Moscow St. Un.

Card 1/2

TSENTSIPER, A.B.; YEREMIN, Ye.N.; KOBOZEV, N.I.

Conversion of hydrocarbons to acetylene in the electric discharge in a static system. Zhur.fiz.khim. 37 no.7:1487-1491 Jl '63. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet.

SHASHKOV, A.S.; KRYLOVA, I.V.; KOBOZEV, N.I.

Study of adsorption catalysts by the method of photoelectronic emission. Zhur.fiz.khim. 37 no.8:1851-1854 Ag '63. (MIRA 16:9)

1. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(Adsorption) (Catalytst) (Electrons--Emission)

SHEKHOBALOVA, V.I.; KOBOZEV, N.I.

Active centers of platinum adsorption catalysts in ammonia oxidation. Zhur. fiz. khim. 37 no.9:2131-2132 S '63.
(MIRA 16:12)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

KOMISSAROV, G.G.; KOBOZEV, N.I.; NEKRASOV, L.I.

Luminescence of chlorophyll adsorbed on capron. Zhur. fiz. khim. 37 no.11:2555-2556 N'63. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

KOMISSAROV, G.G.; GAVRILOVA, V.A.; NEKRASOV, L.I.; KOBOZEV, N.I.; YEVSTIGNEYEV, V.B.

Photosensitizing activity of chlorophyll adsorbed on capron as related to the surface concentration. Dokl. AN SSSR 150 no.1:174-175 My '63. (MIRA 16:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova i Institut biokhimii im. A.N.Bakha AN SSSR. Predstavleno akademikom A.N.Tereninym.

(Chlorophyll) (Nylon) (Photosynthesis)

YEREMIN, Ye.N., prof.; KISELEV, A.V., prof.; KOROLEV, N.I., prof.; PANCHENKOV, G.M., prof.; POLTORAK, O.M., prof.; SKURATOV, S.M.,prof.; TATEVSKIY, V.M.,prof.; TOPCHIYEVA, K.V., prof.; FIGUROVSKIY, N.A., prof.; FILIPPOV, Yu.V., prof.; SHAKHPARONOV, M.I., prof.

Ivan Ivanovich Gerasimov; on his sixtieth birthday. Zhur. fiz. khim. 37 no.12:2803-2804 D '63. (MIRA 17:1)

1. Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta.

KOBOZEV, N. I.; KRYLOVA, I. V.; SHASHKOV, A. S.

"The effect of electron properties of support upon exoelectron emission and catalysis."

report submitted to 3rd Intl Cong on Catalysis, Amsterdam, 20-25 Jul 64.

Moscow State Univ im Lomonosov.

PANASYUK, G.P.; NEFEDOVA, A.R.; DANCHEVSKAYA, M.N.; KOBOZEV, N.I. (Moscow)

Catalytic properties of zinc catalysts of adsorption. Zhur.fiz.khim. 38 no.8:2002-2007 Ag '64. (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.

ACCESSION NR: AP4042476 S/0217/64/009/004/0428/0433

AUTHOR: Komissarov, G. G.; Kobozev, N. I.; Nekrasov, L. I.; Tsy*rul'nikov, P. G.

TITLE: Magnetic and optical properties of beta carotene adsorbed on magnesium oxide

SOURCE: Biofizika, v. 9, no. 4, 1964, 428-433

TOPIC TAGS: carotene, chlorophyll, photosynthesis pigments, adsorbed carotene, magnesium oxide, magnesium oxide adsorbent, pigment adsorbent system, carotene magnetic property, carotene optical property, paramagnetic carotene

ABSTRACT: The properties of carotene adsorbed on MgO were studied as a model system by means of optical and magnetic methods. The ultimate purpose of the study was to further investigate the more complicated model systems of two photosynthesis pigments — chlorophyll and carotene — adsorbed on the same carrier. Pure β-carotene (free from other isomers) was adsorbed on analytically pure MgO from a

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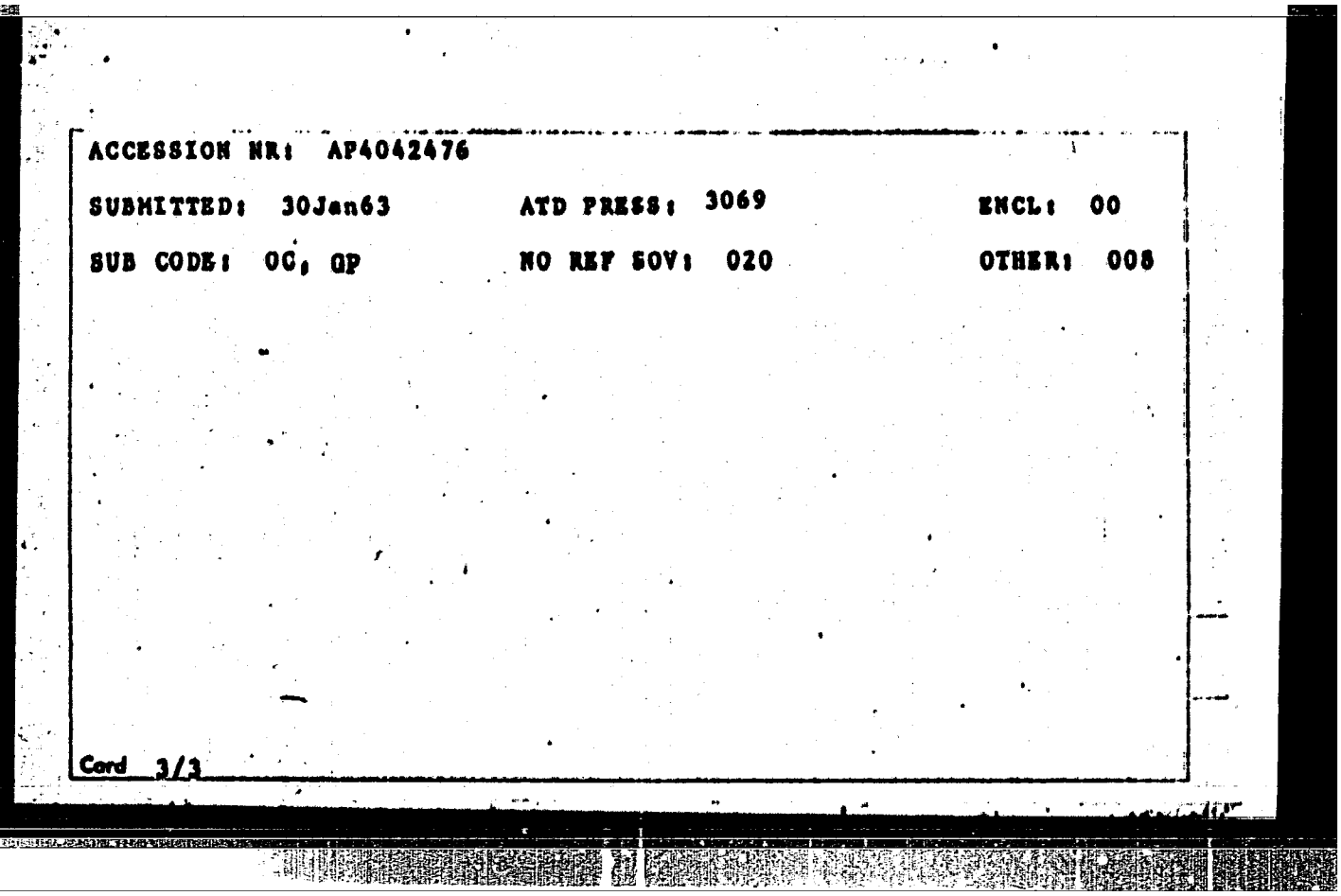
ACCESSION NR: AP4042476

petroleum ether (b.p., 85—95C) solution. A special test indicated that the MgO used was free from ferromagnetic impurities. The carotene adsorption isotherm obtained indicated that a monolayer of flat carotene molecules is formed at the saturation stage; each molecule occupies approximately 120 $Å^2$. It was found that the adsorbed carotene is paramagnetic, while carotene deposited on MgO by evaporation of the solution is diamagnetic. It was proved that this paramagnetic effect is caused by oxygen from the ambient air. However, the details of the process are not clear and require further investigation. The optical studies indicated that, unlike chlorophyll, the adsorbed carotene undergoes a shift of the maximum of diffuse reflection to the long-wave end of the spectrum by 10—15 mμ. The dependence of the coefficient of diffuse reflection (at a wave length of 461 to 468 mμ), and of the specific optical density upon the surface concentration of the adsorbed β-carotene is gradual, in contrast to the step-shaped curve of chlorophyll obtained in previous studies. Orig. art. has: 4 figures.

ASSOCIATION: Moskovskiy gosudarstvenny^y universitet im. M. V. Lomonosova (Moscow State University)

Card 2/3



ACCESSION NR: AP4042476

SUBMITTED: 30Jan63 ATD PRESS: 3069 ENCL: 00

SUB CODE: OC, OP NO REF SOV: 020 OTHER: 008

Card 3/3

ACCESSION NR: AP4011440 S/0076/64/038/001/0080/0088

AUTHORS: Li, Wen-chou (Moscow); Mal'tsev, A.N. (Moscow); Kobozev, N.I. (Moscow)

TITLE: Effect of ultrasonics on the genesis and properties of heterogeneous catalysts

SOURCE: Zhurnal fiz. khim, v. 38, no. 1, 1964, 80-88

TOPIC TAGS: ultrasonics, platinum black, palladium black, synthesis, sonication, catalytic activity, surface area, ultrasonic frequency

ABSTRACT: The effects of an ultrasonic field on the synthesis of crystalline platinum and palladium catalysts and on their activity and physical properties were studied. Platinum and palladium blacks obtained by reducing water solutions of chloroplatinic acid and palladium chloride with formaldehyde showed different catalytic activity and properties depending on the gas atmosphere under which sonication took place (nitrogen, air, hydrogen) and on the ultra-

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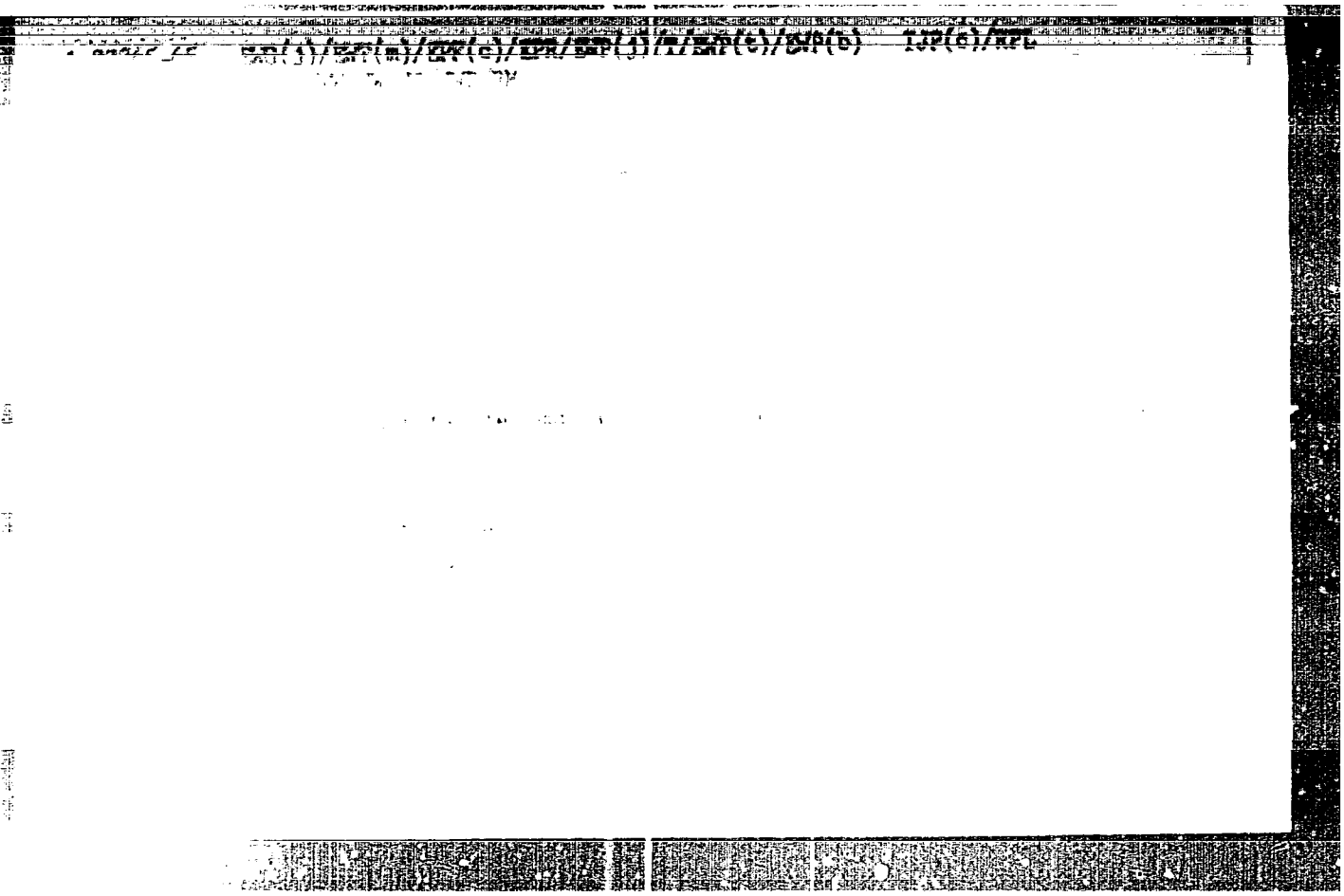
ACCESSION NR: AP4011440

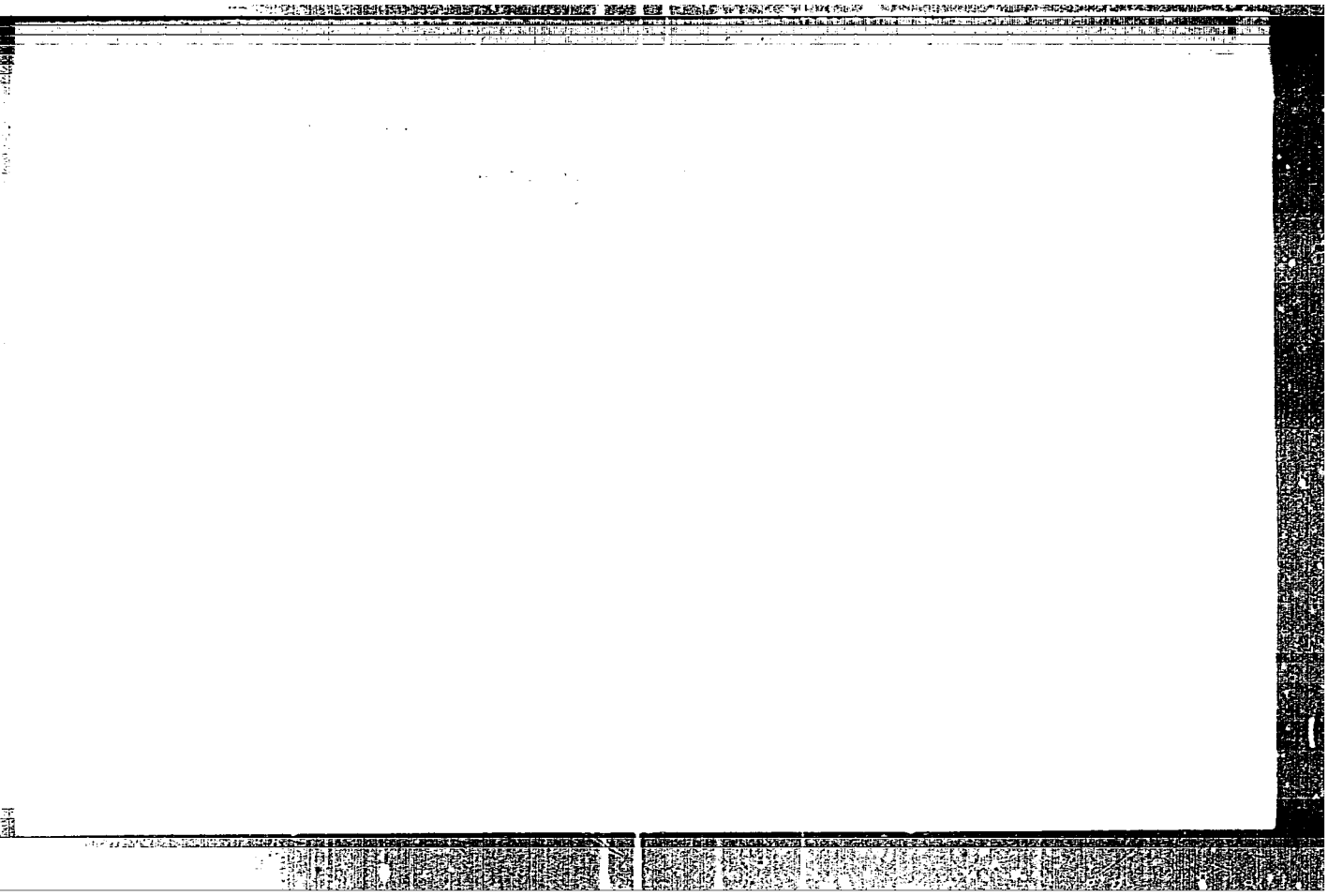
sonic frequency. Under a nitrogen atmosphere the activity of platinum black was increased with increased ultrasonic frequency; the activity of palladium black was decreased. The hydrogenation and dehydrogenation catalytic activity is increased by sonication of the catalysts; their ability to decompose H_2O_2 is increased 2.5 times. The effect of the gas atmosphere is the same for both materials: their activity is increased by sonication under nitrogen, and decreased under air (to the extent that hydrogenation with an air sonicated black is lower than with a black obtained without ultrasonication). The most favorable conditions for the preparation of active platinum catalysts are a nitrogen atmosphere and high frequency (3000 kc/sec.); for palladium catalysts, nitrogen atmosphere and low frequency (20 kc/sec.). Orig. art. has: 7 tables and 4 figures.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M.V. Lomonosova (Moscow State University)

SUBMITTED: 23Jan63 DATE ACQ: 14Feb64 ENCL: 00
SUB CODE: PH NO REF SOV: 007 OTHER: 001

Card 2/2





APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723410016-7"

KOMISSAROV, G.G.; NEKRASOV, L.I.; KOZOZEV, N.I.

Rate of fluorescence of chlorophyll at various concentrations in an adsorbed condition and in a green leaf. Dokl. AN SSSR 154 no.4:950-952 F '64. (MIRA 17:3)

1. Moskovskiy gosudarstvennyy universitet im. Lomonosova. Predstavleno akademikom A.N. Terenin.

ACCESSION NR: AP4034548 S/0020/64/155/005/1194/1197

AUTHOR: Komissarov, G. G.; Gavrilova, V. A.; Nekrasov, L. I.; Kobozev, N. I.; Yevstigneyev, V. B.

TITLE: Photosensitizing capacity of adsorbed carotene

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1194-1197

TOPIC TAGS: photosynthesis, photochemical reaction, redox system, β carotene, photosensitizing capacity, adsorbed β carotene

ABSTRACT: The photosensitizing capacity of β-carotene adsorbed on alumina gel or polyacrylonitrile has been studied to verify an assumption that besides chlorophyll, carotene in vivo might act as a sensitizing agent of some intermediate photochemical reaction occurring in the process of photosynthesis. The assumption was made on the basis of the structural similarity of the carotene molecule to sensitizers in photography (cyanin dyes) and to the photosensitive material of the eye (visual purple). In preliminary experiments, it was shown that β-carotene adsorbed on magnesia promoted decoloration of thyonine in the presence of ascorbic acid upon illumination with blue light. In quantitative experiments, the

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ACCESSION NR. AP4034548

extinction coefficient was measured during the process of gradual decoloration of a methyl red solution containing ascorbic acid upon illumination with blue light and in the presence of synthetic β-carotene adsorbed on alumina gel or polyacrylonitrile. Plots of the absorption of light versus time show the photosensitizing capacity of the adsorbed β-carotene. The latter in a solution did not show this capacity. The mechanism of photosensitization of the photochemical reduction by adsorbed β-carotene is linked to its behavior in the form of a complex with albumen in physiological processes. Orig. art. has: 2 figures.

ASSOCIATION: Institut biokhimii im. A. N. Bakha, AN SSSR (Institute of Biochemistry, AN SSSR)

SUBMITTED: 090ct63 DATE ACQ: 13May64 ENCL: 00

SUB CODE: CH NO REF SOV: 012 OTHER: 010

Card 2/2